

CLAIMS

1. A chemical indicator ink for steam-formaldehyde sterilization processes containing at least one primary organic dye selected from the group consisting of Congo red, Benzo purpurin B, Chicago sky blue 6B, Direct red 75, Evans blue, 5 Naphthol blue black, Nitro red, and combinations thereof.
2. The chemical indicator ink of claim 1 wherein said at least one primary organic dye undergoes an irreversible color change when exposed to formaldehyde vapor in the presence of steam.
- 10 3. The chemical indicator ink of claim 2 wherein said steam has a temperature of about 70°C.
4. The chemical indicator ink of claim 1 wherein said at least one primary organic dye does not undergo a color change when exposed to ethylene oxide 15 gas, high-temperature steam, dry heat, or combinations thereof.
5. The chemical indicator ink of claim 1 wherein the concentration of said at least one primary organic dye is between about 1.6 and about 23 g/l.
- 20 6. The chemical indicator ink of claim 5 wherein the concentration of said at least one primary organic dye is between about 4.0 and about 8.0 g/l.

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7. The chemical indicator ink of claim 1 wherein said at least one primary organic dye is more sensitive to formaldehyde under alkaline conditions.
8. The chemical indicator ink of claim 1 wherein said at least one primary  
5 organic dye is less sensitive to formaldehyde under acidic conditions.
9. The chemical indicator ink of claim 1 further containing a stabilizing buffer.
10. The chemical indicator ink of claim 9 wherein said stabilizing buffer has a  
10 pH of between about 4 and about 6.
11. The chemical indicator ink of claim 9 wherein said stabilizing buffer does not react with said at least one primary organic dye.
12. The chemical indicator ink of claim 1 further containing at least one  
15 secondary organic dye.
13. The chemical indicator ink of claim 12 wherein said at least one secondary organic dye enhances the color change of said chemical indicator ink and does  
20 not undergo a color change when exposed to formaldehyde vapor in the presence of steam.

14. The chemical indicator ink of claim 12 wherein said at least one secondary organic dye is selected from the group consisting of methylene blue, trypan blue, direct blue 71, and combinations thereof.

5 15. The chemical indicator ink of claim 1 wherein said chemical indicator ink is an aqueous ink solution.

16. The chemical indicator ink of claim 15 wherein said aqueous ink solution comprises said at least one primary organic dye dissolved or dispersed in water.

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17. The chemical indicator ink of claim 1 further containing a thickening agent and wherein said thickening agent is selected from the group consisting of waxes, gums, polymers, methyl cellulose, ethyl cellulose, carboxy methyl cellulose, and combinations thereof.

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18. The chemical indicator ink of claim 1 further containing a brightener.

19. The chemical indicator ink of claim 18 wherein said brightener is gelatin.

20 20. The chemical indicator ink of claim 1 further containing a binder or stabilizer.

21. The chemical indicator ink of claim 20 wherein said binder or stabilizer is a polymeric material.

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22. The chemical indicator ink of claim 21 wherein said polymeric material is polyvinyl alcohol.

23. The chemical indicator ink of claim 20 wherein said binder or stabilizer is  
5 gelatin.

24. The chemical indicator ink of claim 1 further containing a preservative.

25. The chemical indicator ink of claim 24 wherein said preservative is sorbic  
10 acid.